REMARKS

Applicants thank the Examiner for the thorough consideration given the present application.

Claims 1-25 are now present in this application.

The abstract and claims 1-4, 9, 11, 15 and 18 have been amended. Reconsideration of the application, as amended, is respectfully requested.

DRAWINGS

The Examiner objected to the drawings as including reference numerals which are not described in the specification. By way of a separate Letter to the Official Draftsperson requesting approval of drawing changes, Fig. 3A has been canceled and Fig. 3B has been relabeled as Fig. 3. Accordingly, this objection is now overcome.

ABSTRACT

The Examiner objected to the Abstract as having more than a single paragraph. By way of the present amendment, the Abstract has been limited to a single paragraph.

OBJECTION UNDER 35 USC 112

Claims 1-25 stand rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

The Examiner objected to the phrase "dimensional changes" since it was not clear which element was changed. By way of the present amendment, this phrase has now been changed to "changes in a dimension of said active element". In view of this, Applicants respectfully submit that the rejection is overcome.

Applicants have also made other changes to the claim to avoid other language which might be considered indefinite.

REJECTION UNDER 35 USC 102

Claims 1-7 and 9-25 stand rejected under 35 USC 102(e) as being anticipated by O'CONNOR et al., U.S. Patent 5,810,528. This rejection is respectfully traversed.

Applicants submit that this reference does not teach the invention as presently claimed. Claim 1 describes a combination of elements in a device for vibration control, including a control unit and converting means, which comprise a vibration sensor and actuator, the actuator including an active element which converts AC voltage into changes in a dimension, where the active element is embedded in the body of a tool holder, so that the changes impart turning moments to the body of the tool holder.

The O'CONNOR et al. reference shows a device for controlling vibrations in a boring system. The Examiner points out that this reference shows a controller unit and converting means with a vibration sensor and actuator. The Examiner also states that the

voltage is converted into dimensional changes by the actuator 24. It is noted that the actuator adjusts the static load on the shock absorbers on either side of a lead slug. This then changes the resonant frequency of the slug. Applicants submit that the combination of elements in claim 1 is not anticipated by the O'CONNOR et al. teachings. In this reference, the actuator causes the shock absorbers to be loaded, but does not make a change in a dimension of an active element. Also, the reference does not impart turning moments to the body of the tool holder. Since claim 1 recites a combination of elements including these features, Applicants submit that claim 1 is not anticipated by the reference.

Claim 9 recites a method corresponding to claim 1. A combination of steps describes a method for vibration control, including detecting the vibrations, generating control vibrations using an active element which generates changes in a dimension of the active element, embedding the active element in the tool holder and imparting turning moments to the body of the tool holder. Applicants submit that the reference does not teach all of the steps in this claim either, for the same reasons cited above in regard to claim 1.

Claim 11 describes a combination of elements for a tool holder including an actuator comprising an active element which is controlled to generate changes in a dimension of the active element and where the active element is embedded in the body of the tool

holder to impart turning moments to the body of the tool holder. Applicants submit that this claim is also allowable over the O'CONNOR et al. reference for the same reasons recited above with regard to claim 1.

Claims 2-8, 10 and 12-25 depend from these allowable independent claims and, as such, are also considered to be allowable. In addition, these claims recite other features in combination with this combination of elements. In claim 2, the claims adds that the center axis of the active element is spaced from the center axis of the tool holder. The same limitation occurs in claim 12. Applicants submit that this limitation is also not seen in the O'CONNOR et al. reference, since the center axis of the lead slug assembly is the same as the axis of the tool holder. Finally, other dependent claims include other limitations not seen in the reference. Accordingly, these claims are also considered to be allowable.

REJECTION UNDER 35 USC 103

Claim 8 stands rejected under 35 USC 103 as being obvious over O'CONNOR et al. in view of LAZARUS et al., U.S. Patent 5,687,462. This rejection is respectfully traversed.

The Examiner states that the LAZARUS et al. reference shows a cutting device having an active element being a piezoceramic element. Applicants submit that the combination of these two

references would not produce the invention described in claim 8. First, it is not seen how the O'CONNOR et al. reference could be modified to use a piezoceramic element, since the O'CONNOR et al. device relies on a change of vibration frequency by changing the static load on the springs surrounding the lead slug. At best, one skilled in the art would use the piezoceramic element to compress the springs, which still would not product a device anything like the present claimed invention where the active elements change their dimensions to cause a turning moment in the body of the tool holder. Accordingly, Applicants submit that claim 8 defines over this combination of references as well.

CONCLUSION

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all claims are respectfully requested.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants respectfully petition for a one (1) month extension of time for

filing a response in connection with the present application and the required fee of $55.00 is attached herewith.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT OF THE DISCLOSURE:

The Abstract of the Disclosure has been amended as follows:

--ABSTRACT OF THE DISCLOSURE

[The invention relates to a] A device and method for vibration control in a machine for cutting, said machine comprising a cutting tool supported by a tool holder. The device comprises a control unit and converting means which are connectible to the control unit and comprise a vibration sensor and an actuator. The actuator comprises an active element which converts an A.C. voltage supplied by the control unit to the actuator into dimensional changes. Said active element is adapted to be embedded in the body of the tool holder and in such manner that said dimensional changes impart bending to the body of the tool holder.

[The invention further relates to a method for vibration control in cutting.

The invention also relates to a tool holder.]--

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A device for vibration control in a machine for cutting, said machine comprising a cutting tool supported by a tool holder, the device comprising a control unit and converting means which are [connectible] connected to the control unit and comprise a vibration sensor and an actuator, and the actuator comprising an active element, which converts an A.C. voltage supplied by the control unit to the actuator into [dimensional] changes in a dimension of said active element, wherein said active element is [adapted to be] embedded in the body of the tool holder, and wherein said active element is [adapted to be] embedded in such

manner that said [dimensional] changes in a dimension impart turning moments to the body of the tool holder.

2. (Amended) A device as claimed in claim 1, wherein said active element is [adapted to be] embedded with its centre axis spaced from the centre axis of the tool holder.

3. (Amended) A device as claimed in claim 1, wherein said active element is [adapted to be] embedded close to the surface of the tool holder.

4. (Amended) A device as claimed in claim 1, said tool holder being elongated and having an end portion which is [adapted to be] received in a mounting recess of the machine, wherein said active element is positioned along the tool holder such that, when the tool holder is held in said recess, a portion of said active element is within said recess.

9. (Amended) A method for vibration control in cutting, comprising the steps of detecting the vibrations of a tool holder during cutting, and generating control vibrations in the tool holder, by means of at least one active element which is electrically [controllable] controlled to [dimensional] generate changes in a dimension of said active element, the method further comprising the steps of embedding said active element in the body of the tool holder and, for generating the control vibrations, imparting turning moments to the body of the tool holder by generating at least one control voltage and applying the control voltage across said active element, and by varying the control voltage according to the detected vibrations.

11. (Amended) A tool holder which is adapted to support a tool for cutting, the tool holder comprising an actuator, said actuator comprising an active element, which is electrically [controllable] controlled to [dimensional] generate changes in a dimension of said active element, wherein said active element is embedded in the body of the tool holder and [is adapted to impart] imparts, through said [dimensional] changes in dimension, turning moments to the body of the tool holder.

15. (Amended) A tool holder as claimed in claim 11, said tool holder being arranged to be mounted in a machine for boring, said tool holder being elongated and having an end portion which is [adapted to be] received in a mounting recess of the machine, wherein said active element is positioned along the tool holder such that, when the tool holder is held in said recess, a portion of said active element is within said recess.

18. (Amended) A tool holder as claimed in claim 11, wherein said active element is arranged in a recess in the tool holder and has two opposite power transmitting surfaces, said power transmitting surfaces being engaged with surfaces of the body of the tool holder and said [dimensional] changes changing the distance between the power transmitting surfaces, and that the recess is sealed.